

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A system ~~for channel coding data within a digital communications system~~ comprising:

a data receiving circuit for:

receiving a digital input data sequence; and

~~periodically~~ inserting known symbols into the digital input data sequence and ~~forming to form~~ an expanded digital input data sequence; the known symbols being inserted with a periodicity determined by based on a constraint length of an encoder; and

an encoder operatively connected to said data receiving circuit for trellis encoding the expanded digital input data sequence to produce a channel coded data stream such that the number of connections between trellis nodes in a trellis are reduced, said encoder operative according to the constraint length.

2. (Original) A system according to Claim 1, wherein the known symbols that are inserted comprise zeros.

3. (Canceled)

4. (Original) A system according to Claim 1, wherein said encoder comprises [[a]] at least one of a convolutional encoder and a turbo encoder.

5. (Original) A system according to Claim 1, wherein the encoder applies code words that are one-to-one mappings of the distinct paths on a trellis to binary sequences.

6. (Original) A system according to Claim 1, wherein the topology of the trellis corresponds to memory length m , and the known symbols are inserted after each m symbol within the input data sequence.

7. (Currently Amended) A system according to Claim 1, wherein the encoder is operative as a generator matrix having a constraint length $k=m-1$, wherein m corresponds to the memory length, and the code rate is $R=1/1$ such that the known symbols are inserted after each $k-1$ information bit.

8. (Original) A system according to Claim 1, and further comprising a Maximum Likelihood (ML) decoder for receiving and decoding the channel coded data stream.

9. (Original) A system according to Claim 8, wherein the Maximum Likelihood (ML) decoder comprises a Viterbi decoder.

10. (Currently Amended) A method ~~of channel coding data in a digital communications system~~ comprising the steps of :
receiving a digital input data sequence;

~~periodically~~ inserting known symbols into the digital input data sequence ~~and forming to~~
form an expanded digital input data sequence; the known symbols being inserted with a
periodicity determined by ~~based on~~ a constraint length of an encoder; and

trellis encoding the expanded digital input data sequence based on the constraint length of
the encoder to produce a channel coded data stream such that the number of connections between
trellis nodes in a trellis are reduced.

11. (Original) A method according to Claim 10, wherein the step of inserting known
symbols comprises the step of inserting zeros into the digital input data sequence.

12. (Currently Amended)

13. (Original) A method according to Claim 10, and further comprising the step of
applying code words that are one-to-one mappings of the distinct paths on a trellis to binary
sequences.

14. (Original) A method according to Claim 10, wherein the topology of the trellis
corresponds to the memory length m , and further comprising the step of inserting a known
symbol after each m symbol within the input data sequence.

15. (Original) A method according to Claim 10, and further comprising the step of
decoding channel coded data stream within a maximum likelihood (ML) decoder.

16. (Original) A method according to Claim 15, and further comprising the step of decoding the channel coded data stream within a Viterbi decoder.

17. (Currently Amended) A method of ~~channel coding data in a digital communications system~~ comprising the steps of:

receiving a digital input data sequence;

periodically inserting known symbols into the digital input data sequence and forming to form an expanded digital input data sequence; the known symbols being inserted with a periodicity determined by based on a constraint length $k = m - \lceil \log_2 R \rceil$ of an encoder, wherein m corresponds to a memory length and a code rate is $R = 1/4$, such that the known symbols are inserted after each $k - \lceil \log_2 R \rceil$ information bit; and

trellis encoding the expanded digital input data sequence to produce a channel coded data stream, wherein the number of connections between trellis nodes in a trellis are reduced.

18. (Original) A method according to Claim 17, wherein the step of inserting known symbols comprises the step of inserting zeros into the digital input data sequence.

19. (Canceled)

20. (Original) A method according to Claim 17, and further comprising the step of applying code words that are one-to-one mappings of the distinct paths on a trellis to binary sequences.

